



## Flood risk assessment as an integral part of urban planning

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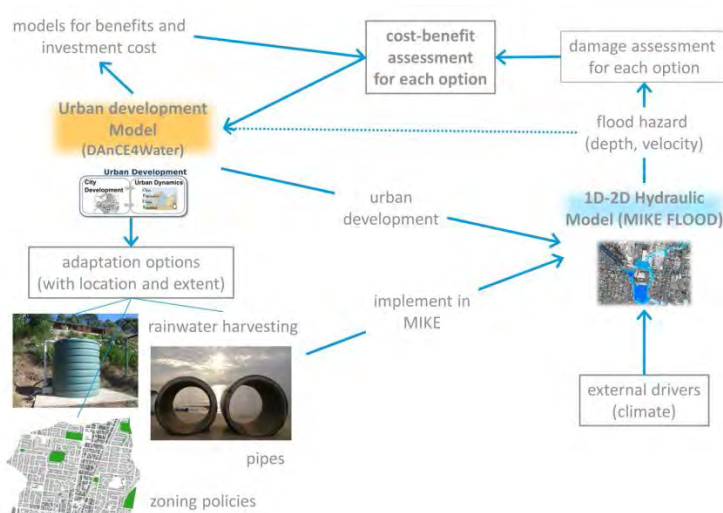
## Flood risk assessment as an integral part of urban planning

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Identifying robust, liveable and economically efficient options for the design of urban water infrastructure is a formidable problem that requires projections of future developments of climate, society and urban space, each of which is subject to deep uncertainties. For this reason, design decisions based on detailed assumptions about the future will often prove suboptimal and a better planning approach is required. One possible approach is to test potential designs of infrastructure against a variety of potential futures. Designs should ideally be both robust and adaptable in the case of unanticipated changes.



We have developed a software framework that integrates systematic assessment of flood adaptation options (Zhou et al., 2012) using the 1D-2D hydraulic model MIKE FLOOD and recent developments in urban development modelling using the DAnCE4Water platform (Urich and Rauch, 2014).

This framework allows for the systematic evaluation of flood adaptation strategies given a variety of

future scenarios for urban development and climate change. In addition, flood adaptation options can also be evaluated with respect to non-hydrological aspects that may be relevant in the urban planning process. In an Australian case study, we demonstrate that systematic evaluation allows identifying robust strategies that reduce future flood risk while maintaining the overall speed of urban development.

### References

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- Zhou Q., Mikkelsen P.S., Halsnæs K., Arnbjerg-Nielsen K. (2012), Framework for economic pluvial flood risk assessment considering climate change effects and adaptation benefits. *J Hydrol*, 414-415, 539-549.